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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/538,469      | 03/29/2000  | Kouki Ogawa          | Q58486              | 6688             |

7590 04/19/2002

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EXAMINER

HA, NATHAN W

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 2814     |              |

DATE MAILED: 04/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                          |                  |
|------------------------------|--------------------------|------------------|
| <b>Office Action Summary</b> | Application No.          | Applicant(s)     |
|                              | 09/538,469               | OGAWA ET AL.     |
|                              | Examiner<br>Nathan W. Ha | Art Unit<br>2814 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 18 March 2002.
- 2a) This action is FINAL.                  2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-13 and 16-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-13 and 16-18 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-13 and 16-18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In the case, limitation "distinct from the printed wiring substrate" renders the new matter situation, in claims 1-2 and 4.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 1-13 and 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Zavrel, Jr. et al. (US. 6,218,729 B1, hereinafter, Zavrel, previously cited.)

In regard to claims 1-2, 4, 9-10, in figs. 3 and 8-9, Zavrel discloses a printed wiring substrate 822 having a planar surface and a built-in capacitor 804 on which an IC chip 820 is mounted. The capacitor comprises

a pair of electrodes 860, 862; and

a plurality of capacitor terminals 810, 812 projecting beyond the surface of the printed substrate, wherein the respective capacitor terminals are electrically connected to one or the other paired electrodes, figs. 8-9;

the printed wiring substrate 822 comprises a plurality of substrate terminals, for example, 844, 840;

the IC chip 820 comprises a plurality of connection-to-capacitor terminals 828 and plurality of connection-to-substrate terminals, also labeled as 828, on the right side of fig. 8;

the plurality of capacitor terminals of the capacitor are respectively flip-chip-bonded to a plurality of connection-to-capacitor terminals of the IC chip, see fig. 8; and

the plurality of the substrate terminals of the printed wiring substrate are respectively flip-chip-bonded to a plurality of connection-to-substrate terminals of the IC chip. The region directly below the die where the capacitor formed is considered as a cavity therein. This capacitor, clearly, is constructed in an accommodating cavity embedded in the substrate, see fig. 8.

In regard to claim 3, the IC-chip-carrying printed wiring substrate is a CSP adapted for mounting an IC chip, see col. 2, first paragraph, and fig. 8.

In regard to claim 5, see col. 3, first paragraph, see also fig. 8.

In regard to claim 6, see above discussion of claim 1, further see fig. 8, the plurality of capacitor terminals and the plurality of substrate terminals are substantially coplanar.

In regard to claims 7-8, see fig. 9.

In regard to claims 11-12, see fig. 9.

In regard to claim 13, in fig. 8, the balls 830 are used for connecting to another circuit substrate, inherently.

In regard to claims 16-18, Zavrel further discloses the printed wiring substrate comprises a core substrate made of resin and a capacitor accommodation cavity for the capacitor; and

the capacitor comprises a dielectric layer made of ceramic and electrodes arranged in alternative layers, see figs. 3 and 8 and col. 5, lines 30-45, and the abstract.

#### ***Response to Arguments***

5. Applicant's arguments filed 3/18/02 have been fully considered but they are not persuasive.

Applicants submit that the 810 and 812 terminals are not part of the capacitor 804. This conclusion is not persuasive. The capacitor 804 in the Zavrel is defined by two separated plates 860 and 862. These two plates are connected to two terminals 810 and 812 as explicitly showed in the schematic of fig. 8. This capacitor further directly connected to the IC chip 820 through bump 828. Furthermore, as mentioned in the 112

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above, the newly added limitation is new matter. Applicants should respond appropriately to this matter in the next communication paper.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Ha whose telephone number is (703) 305-3507. The examiner can normally be reached on M-F 9:00-5:00(EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and 308-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Nathan Ha  
April 15, 2002

  
OLIK CHAUDHURI  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800